

U.S. Patent Application Serial No. 09/673,194
Amendment filed December 14, 2004
Reply to OA dated July 14, 2004

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claim 1 (Currently Amended): A water-based pigment dispersion comprising:

a pigment and a cross-linked thermoplastic resin containing carboxylic group,

wherein said pigment is dispersed with a water soluble or self-emulsifying thermoplastic resin containing carboxylic group and, after said pigment is dispersed, said water soluble or self-emulsifying thermoplastic resin is cross-linked with a cross-linking agent to form said cross-linked thermoplastic resin containing carboxylic group under the condition that the dispersion obtained after the completion of the cross-linking has a pH of 6.0 to 8.0,

in which the ratio of said pigment to said water soluble or self-emulsifying thermoplastic resin (pigment/thermoplastic resin (weight ratio of effective solid matter)) is 10/10 to 10/1, and

the ratio of said cross-linking agent to said water soluble or self-emulsifying thermoplastic resin (cross-linking agent/thermoplastic resin (weight ratio of effective solid matter)) is 1/100 to 50/100.

Claim 2 (Previously Presented): The water-based pigment dispersion of Claim 1, wherein the water soluble or self-emulsifying thermoplastic resin containing carboxylic group is an acrylic resin or a polyurethane, and the thermoplastic resin has number average molecular weight of 2000

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to 20000 and acid value of 30 to 300.

Claim 3 (Original): The water-based pigment dispersion of Claim 1, wherein the cross-linking agent is an aqueous polymer of which reaction point for cross-linking is carboxylic group.

Claims 4 - 8 (Canceled).

Claim 9 (Original): A water-based ink containing the water-based pigment dispersion of Claim 1.

Claim 10 (Currently Amended): A process for preparing the water-based pigment dispersion of Claim 1, comprising the steps of:

(1) predispersing a pigment and a water soluble or self-emulsifying thermoplastic resin containing carboxylic group to give a mixture,

(2) treating said mixture by a dispersing machine so as to disperse said pigment with said thermoplastic resin to give a water-based dispersion,

(3) subsequently cross-linking said thermoplastic resin in said dispersion with a cross-linking agent to give a water-based dispersion having a pH of 6.0 to 8.0 and comprising said pigment and the cross-linked thermoplastic resin containing carboxylic group, and

(4) adjusting the pH of the dispersion of step (3) containing said pigment and the cross-linked

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thermoplastic resin to alkaline range.

Claim 11 (Previously Presented): The water-based pigment dispersion of claim 1, wherein the solid matter concentration of the water-based pigment dispersion is 5 to 40% by weight.

Claim 12 (new): The water-based pigment dispersion of claim 1, wherein said cross-linking agent is a member selected from the group consisting of a polycarbodiimide, an oxazoline polymer, a polyethyleneimine, an oligoester (meth)acrylate oligomer, and a urethane (meth)acrylate oligomer.